

REMARKS

A restriction was required as between Group 1, claims 17-25 and 32, drawn to calculating the physical feature by curve fitting wherein the backscatter function is a function of an average path length traveled by detected, scattered photons; and Group 2, claims 26-31 and 33-36, drawn to calculating the physical feature by curve fitting in which the backscatter function is a function of a mean free path of photons.

The applicant hereby affirms that he has elected Group 2 for further prosecution in this application.

New method claim 37 is generic to both Group 1 and Group 2. Method claim 17, although non-elected, has been amended to depend upon claim 37. The applicant respectfully believes that claim 37 distinguishes over the cited art and requests that, should claim 37 be allowed, that the non-elected claims 17-22 be allowed as well.

Claim 31 was rejected based on 35 U.S.C. § 101 as being drawn to non-statutory subject matter. Such claim has been amended to be directed to a programmed computer to overcome such rejection.

In the September 24, 2008 Office Action, claim 26, and all of the other elected claims (except for claim 32), were rejected as being anticipated by Bigio et al. U.S. patent No. 6,381,018. The applicant respectfully requests reconsideration.

Independent claim 37, as did formerly independent claim 26, recites a method

that uses a “probe comprising a first optical fiber (5) having a first diameter, and at least a second optical fiber (6) having a second diameter.” Claim 37 further recites, as a method step, “sending light coming from the light source, through the first optical fiber;.” Claim 37 further recites the step of “collecting first backscattered radiation through the first optical fiber and second backscattered radiation through the second optical fiber.” Backscattered radiation collected by the first fiber is used to form “a first signal (I),” and backscattered radiation collected by second fiber is used to form “a second signal (J).”

These two signals, i.e., one from the light source and another from a second fiber, are then used to determine “a measured differential backscatter signal as a function of wavelength.” Finally, the measured differential backscatter signal is used to calculate the physical feature “by curve fitting the measured differential backscatter signal to a backscatter function, in which the backscatter function is a function of a mean free path of photons.”

Thus the claimed method employs a single probe having two fibers, one of which both transmits light to the sample and collects backscattered radiation, and the other collects backscattered radiation. As shown in Figure 1, the signal collected by the light emitting fiber 5 is transmitted by separate path 5 and 8 to a common destination (e.g., spectrometer 7) be used together with the signal collected by the

second fiber 6 to form the differential signal.

In contrast, as shown in Figures 2a-2b, Bigio discloses a method and apparatus in which one fiber 12 directs light onto the surface of the tissue 14, and a group of collection fibers 16, spaced at different distances from the fiber 12, to collect light.

Col. 6, ll. 9-19. The Bigio system uses collection fibers which are deliberately separated from the illuminating fiber:

The separate illuminating, 12, and collecting, 16, fibers are placed in direct optical contact with the tissue in order to avoid surface reflections and to insure that all of the collected light has undergone multiple scattering through the tissue in passing between the illuminating fiber and the collecting fiber.

Col. 6, ll. 33-38.

Bigio does not disclose a system using a probe containing both a fiber which emits and collects light, and a second fiber which collects light. Bigio does not even disclose any fiber which both emits and collects light. In Bigio, the fiber which provides light is separated from the fibers which collected light.

Thus, Bigio requires a longer path length for the photons than the claimed invention. Bigio cannot use a variation in the fiber diameter as a parameter for varying the path length nor sampling depth.

Bigio suggests that a difference in absorption coefficients can be detected by comparing two wavelengths in the single obtained signal. Col. 4, ll. 55-58. This is

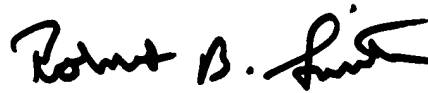
completely different from determining the differential backscatter by using two signals from different fibers.

Finally, Bigio discusses variations in path length resulting from variations in optical properties and the separate distance. Col. 5, ll. 19-35. This is not the same as “curve fitting.”

For all of these reasons, the applicant respectfully submits that the method and apparatus disclosed in Bigio do not anticipate the pending claims.

For the foregoing reasons, the applicant respectfully requests favorable consideration and allowance of the amended application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert B. Smith", written over a horizontal line.

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